

We Claim:

1. An apparatus for introducing a closure media to seal a puncture site in a vessel comprising
a catheter including a closure media
5 introduction port;
a static mixer in communication with the closure media introduction port;
a closure media delivery lumen coupled to the static mixer; and
10 an expandable member coupled to a distal portion of the catheter.
2. An apparatus as in claim 1, further comprising
a guidewire lumen extending from a proximal
15 portion to the distal portion of the catheter.
3. An apparatus as in claim 1 wherein the static mixer is a cartridge.
4. An apparatus as in claim 1 wherein the static mixer is incorporated into
20 the catheter.
5. An apparatus for introducing a closure media to seal a puncture site in a vessel comprising
a catheter including a closure media introduction port;
25 a guidewire lumen extending from a proximal portion to a distal portion of the catheter;
a static mixer coupled to the closure media introduction port;
a closure media delivery lumen coupled to the
30 static mixer;
a closure media advancement port positioned at the distal portion of the catheter; and
an expandable member coupled to the distal portion of the catheter.
- 35 6. An apparatus as in claim 5

wherein the static mixer is a cartridge.

7. An apparatus as in claim 5

wherein the static mixer is incorporated into the catheter.

5 8. An apparatus as in claim 5

wherein the static mixer is in a surrounding relationship to the guidewire lumen.

9. An apparatus as in claim 5

10 wherein the expandable member comprises a balloon sized to be inflatable within an interior of a blood vessel.

10. An apparatus as in claim 5

wherein the expandable member comprises a basket.

15 11. A closure device for sealing a puncture in a body vessel comprising

an elongated body having a proximal end and a distal end sized to be positioned

within a lumen of the body vessel; and

20 first and second closure composition precursor lumens within the elongated body,

the first and second closure composition precursor lumens containing one or more closure composition precursors, the first and second closure

25 composition precursor lumen respectively having first and second entrance ports adjacent the proximal end of the elongated body through which the one or more fluent

closure composition precursors can be delivered into the first and second composition precursor lumens

30 respectively, each of the first and second closure composition precursor lumens including an exit port for separately delivering a fluent closure composition

precursor adjacent the distal end of the elongated body, the first and second closure composition precursor lumens

35 being connected within the elongated body to cause mixing

of the closure composition precursor carried within each lumen.

12. The closure device of claim 11

5 wherein each of the first and second closure composition precursor lumens include at least two exit ports, the exit ports of the first and second closure composition lumens being alternatively positioned around the elongated body.

13. The closure device of claim 11

10 wherein the first and second closure composition precursor lumens are connected within the elongated body to cause mixing of closure composition precursor carried within each lumen.

14. The closure device of claim 11

15 wherein the first and second closure composition precursor lumens are connected within the elongated body by a static mixer to cause mixing of the closure composition precursor carried within each lumen.

15. The closure device of claim 14

20 wherein the static mixer is a cartridge.

16. The closure device of claim 14

wherein the static mixer is incorporated into the catheter.

17. A closure device for sealing a puncture

25 in a body vessel comprising

a sealer/dilator for dilating tissue adjacent a vessel puncture, the sealer dilator including a proximal end and a distal end sized to not enter the vessel; and

30 at least one closure composition precursor lumen within the sealer/dilator having an entrance port adjacent the proximal end of the sealer/dilator through which one or more fluent closure composition precursors can be delivered into the closure composition precursor
35 lumen, a static mixer which mixes the one or more fluent

closure composition precursors within the closure composition precursor lumen, and an exit port adjacent the distal end of the sealer dilator through which the one or more fluent closure composition precursors can be delivered outside the vessel adjacent the vessel puncture.

18. The closure device of claim 17 wherein the static mixer is incorporated into the catheter.

10 19. The closure device of claim 17 wherein the static mixer is a cartridge.

20. A closure device for sealing a puncture in a body vessel comprising
a sealer/dilator for dilating tissue adjacent
15 a vessel puncture, the sealer dilator including a proximal end and a distal end sized to not enter the vessel;

at least two closure composition precursor lumens within the sealer/dilator having an entrance ports adjacent the proximal end of the sealer/dilator through which one or more fluent closure composition precursors can be delivered into the closure composition precursor lumen, and exit ports adjacent the distal end of the sealer/dilator through which the one or more fluent
25 closure compositions can be delivered outside the vessel adjacent the vessel puncture, the at least two closure composition precursor lumens being connected at a junction within the sealer/dilator;

a static mixer connected at the junction to
30 cause mixing of closure composition precursor carried within each lumen; and

an exit port adjacent the distal end of the sealer/dilator through which the one or
more fluent closure composition precursors can
35 be delivered outside the vessel adjacent the vessel

puncture.

21. The closure device of claim 20
wherein the at least two closure composition
precursor lumens include at least two exit ports, the
5 exit ports of the at least two lumens being alternatively
positioned around the distal end of the sealer/dilator.

22. The closure device of claim 20
further comprising a guidewire lumen.

23. The closure device of claim 20
10 wherein the static mixer is incorporated into
the catheter.

24. The closure device of claim 20
wherein the static mixer is a cartridge.

25. A closure device for sealing a puncture
15 in a body vessel comprising
a catheter having a proximal end and a distal
end;

at least two closure composition precursor
lumens within the catheter having entrance ports adjacent
20 the proximal end of the catheter through which one or
more fluent closure composition precursors can be
delivered into the closure composition precursor lumen,
and exit ports adjacent the distal end of the catheter
through which the one or more fluent closure compositions
25 can be delivered outside the vessel adjacent the vessel
puncture, the at least two closure composition precursor
lumens being connected at a junction within the catheter;
and

a static mixer connected at the junction to
30 cause mixing of closure composition precursor carried
within each lumen.

26. The closure device of claim 25
wherein the static mixer is incorporated into
the catheter.

35 27. The closure device of claim 25

wherein the static mixer is a cartridge.

28. The closure device of claim 25

5 wherein each of the at least two closure composition precursor lumens include at least two exit ports, the exit ports of the at least two lumens being alternatively positioned around the distal end of the catheter.